

WHAT WE CLAIMS IS

1. A clamping device for clamping and positioning a work piece, the device comprising:

- a box-shaped body having a longitudinal axis  
5 extending from a front end

- at least one gripping member partially protruding from the front end of the box-shaped body, said gripping member being movable between an advanced non-operative position and a retracted operative  
10 position for restraining the work piece;

- control means for moving the gripping member, said control means comprising a thrust member sliding parallel to the longitudinal axis of the box-shaped body of the device, said gripping member being  
15 operatively connected to the thrust member by an articulated quadrilateral system and an intermediate toggle-lever mechanism; and in which said articulated system comprises:

an L-shaped lever pivotally supported by the box-  
20 shaped body to rotate according to a first pivotal axis, said L-shaped lever having a first arm defining a first connecting rod of the articulated system connected to the gripping member by a first articulation axis and a second arm connected to the  
25 toggle-lever mechanism;

a second connecting rod pivotally supported by the box-shaped body to rotate according to a second pivotal axis, said second connecting rod being in turn connected to the gripping member by a second articulation axis; wherein the first and the second connecting rods of the articulated system are of different lengths, and wherein the pivotal axes or articulation axes, of said first and second connecting rods, lie in a plane passing through a reference line forming an angle with the longitudinal axis of the box-shaped body of the clamping device.

2. A clamping device according to claim 1 in which the first and second connecting rods have a respective longitudinal axis, wherein in the retracted position of the gripping member, the longitudinal axes of the first and the second connecting rods are differently slanted with respect to the longitudinal axis of the box-shaped body.

3. A clamping device according to claim 2, wherein the longitudinal axes of said first and second connecting rods form an angle with each other ranging from  $2^{\circ}$  to  $10^{\circ}$ .

4. A clamping device according to claim 3, wherein the distance between the pivotal axes of said first and second connecting rods in the direction of

the longitudinal axis of the box-shaped body differs from to the distance between the articulation axes for said first and second connecting rods.

5        5. A clamping device according to claim 1, comprising a work-piece centring element fastened to the front end of the box-shaped body, said centring element being provided with a cavity for housing the gripping member in its advanced position, and at least one lateral slit from which an hook shaped end portion  
10 of the gripping member may protrudes.

6. A clamping device according to claim 1, wherein the first connecting rod has a length greater than that of the second connecting rod.

7. A clamping device according to claim 1,  
15 wherein the pivotal axes of said first and second connecting rods, in the retracted position of the gripping member are in an advanced position with respect to the corresponding articulation axes for connection to the gripping member, viewed in the  
20 direction of the longitudinal axis of the box-shaped body of the clamping device.

8. A clamping device according to claim 1, wherein said control means for moving the gripping member comprise a manually operable control lever  
25 operatively connected to the thrust member of the

clamping device.

9. A clamping device according to claim 1, wherein said control means for moving the gripping member comprise a linear actuator operatively connected  
5 to the thrust member of the clamping device.

10. A clamping device according to claim 1, wherein each articulation axis of the gripping member is consisting of a pin removably fitted through aligned apertures in the box-shaped body of the clamping  
10 device.

11. A clamping device for clamping a work piece comprising:

- a box-shaped body having a longitudinal axis;
- first and second gripping members partially  
15 protruding from a front end of the box-shaped body, said gripping members being supported by a first respectively by a second articulated quadrilateral system to be moved between an advanced and a retracted position in which they restrain the work piece;

20 each of said articulated quadrilateral system comprising a connecting rod pivotally supported by the box-shaped body to rotate according to a pivotal axis, wherein the pivotal axes of both connecting rod are operatively connected to each other by a gearing; and

25 control means for conjointly moving the gripping

members, said control means comprising a thrust member operatively connected by a toggle lever mechanism to one of said articulated quadrilateral systems supporting the gripping members of the clamping device.

5        12. A clamping device according to claim 11, wherein each articulated quadrilateral system comprises:

        a first connecting rod pivotally supported by the box-shaped body to rotate according to a first pivotal  
10    axis, said first connecting rod being connected to a respective gripping member by a first articulation axis;

        a second connecting rod pivotally supported by the box-shaped body to rotate according to a second pivotal  
15    axis, the second connecting rod being in turn connected to respective gripping member by a second articulation axis;

        wherein the first and the second connecting rods of each articulated quadrilateral system are differing  
20    in lengths from each other; and wherein the pivotal axes, or articulation axes, of said first and second connecting rods of each articulated quadrilateral system, lie in a respective plane passing through a reference line forming an angle with the longitudinal  
25    axis of the box-shaped body of the clamping device.

13. A clamping device according to claim 12,  
wherein the first connecting rod of one of said  
articulated quadrilateral system is provided by a side  
arm of an L shaped lever articulated to an intermediate  
5 connecting rod of the toggle-lever mechanism.

14. A clamping device according to claim 11,  
wherein the first and the second connecting rods of  
each articulated quadrilateral system have a respective  
longitudinal axis and wherein the longitudinal axes of  
10 the first and the second connecting rods in the  
retracted position of the gripping member are  
differently slanted with respect to the longitudinal  
axis of the box-shaped body.

15. A clamping device according to claim 14,  
15 wherein the longitudinal axes of said first and second  
connecting rods form an angle with each other ranging  
from 2° to 10°.

16. A clamping device according to claim 12,  
wherein the distance between the pivotal axes of said  
20 first and second connecting rods of each articulated  
quadrilateral system, in the direction of the  
longitudinal axis of the box-shaped body differs from  
the distance between the articulation axes for said  
first and second connecting rods.

25 17. A clamping device according to claim 12,

comprising a work-piece centring element fastened to the front end of the box-shaped body, said centring element being provided with a cavity for housing the gripping members in their advanced position, and  
5 opposite lateral slits from which an hook shaped end portion of each gripping member may protrudes.

18. A clamping device according to claim 11, wherein the first connecting rod of the first articulated quadrilateral system has a length shorter  
10 than that of the second connecting rod of the same first articulated quadrilateral system, and

wherein the first connecting rod of the second articulated quadrilateral system has a length greater than that of the second connecting rod of the same  
15 second articulated quadrilateral system.

19. A clamping device according to claim 11, wherein said gear mechanism comprises first and second intermediate gear members, each of said gear members meshing with a crown gear coaxially arranged to the  
20 respective pivotal axis of the second connecting rods of each articulated quadrilateral system of the clamping device.

20. A clamping device according to claim 11, wherein the pivotal axes of said first and second  
25 connecting rods in the retracted position of each

gripping member are in a retracted position with respect to the corresponding articulation axes viewed in the direction of the longitudinal axis of the box-shaped body of the clamping device.

5        21. A clamping device according to claim 11, wherein said control means for moving the gripping member comprise a manually operable control lever operatively connected to the sliding thrust member of the clamping device.

10       22. A clamping device according to claim 11, wherein said control means for moving the gripping members comprise a linear actuator operatively connected to the thrust member of the clamping device.

15       23. A clamping device according to claim 11, wherein the articulation axes of each gripping member are consisting of pins removably fitted through aligned apertures in the box-shaped body of the clamping device.